

# DoD Global Influenza Surveillance Program: *Influenza Surveillance at AFIOH*

## Overall Lab Surveillance

### Total Specimens Collected

- Collected in Week 07: 57
- Season Total: 1,643

### Total Influenza Isolates

Identified in Wk 07; Cumulative

- Influenza A: 45 ; 217
- Influenza B: 18 ; 97

### Total Influenza Subtyped

Identified in Wk 07; Cumulative

- A/H1N1: 0 ; 9
- A/H3N2: 0 ; 100
- B/HongKong: 0 ; 18
- B/Shanghai: 0 ; 3

## Sentinel Site Lab Surveillance

### Sentinel Specimens Collected

- Collected in Week 07: 37
- Season Total: 1,047

### Sentinel Influenza Isolates

Identified in Wk 07; Cumulative

- Influenza A: 36 ; 161
- Influenza B: 2 ; 13

### Sentinel Influenza Subtyped

Identified in Wk 07; Cumulative

- A/H1N1: 0 ; 8
- A/H3N2: 0 ; 71
- B/Hong Kong: 0 ; 4
- B/Shanghai: 0 ; 1

## Overseas Research Lab Surveillance

### Research Specimens Collected

- Collected in Week 07: 28
- Season Total: 302

### Research Influenza Isolates

Identified in Wk 07; Cumulative

- Influenza A: 0 ; 7
- Influenza B: 16 ; 82

### Research Influenza Subtyped

Identified in Wk 07; Cumulative

- A/H1N1: 0 ; 1
- A/H3N2: 0 ; 6
- B/Hong Kong: 0 ; 13
- B/Shanghai: 0 ; 2

## Contents

Overall Laboratory Surveillance 2-4

Influenza-like Illness 4

Army MEDCEN Surveillance 5

Contributions to National/  
International Surveillance 6

CDC / WHO Surveillance 6

Avian Influenza Updates 6

Program Overview 7

## Week 07

12-18 February 2006

### Current WHO Phase of Pandemic Alert: **PHASE 3**

\*Phase 3 = a new influenza virus subtype is causing disease in humans, but is not yet spreading efficiently and sustainably among humans. The designation of phases, including decisions on when to move from one phase to another, is made by the Director-General of WHO. Source: [WHO](#)

### Influenza (02 Oct - Present)

**314 influenza isolates**  
**217 Influenza A; 97 Influenza B**

21% of completed specimens were positive for an influenza virus: 15% influenza A; 6% influenza B.

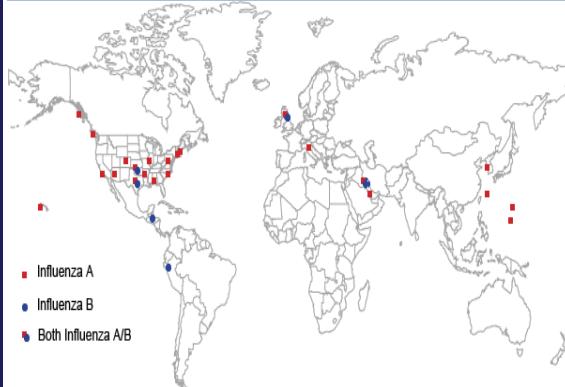
#### Influenza A

A (H1N1): 9  
A (H3N2): 100  
Un-subtyped: 108

#### Influenza B

B (Hong Kong): 18  
B (Shanghai): 3  
Un-subtyped: 76

### Locations of identified influenza viruses



### Locations of identified influenza subtypes



### Vaccination Status

95% of the Active Duty Air Force, 89% of Air National Guard, and 79% of Air Force Reserve are currently vaccinated (as of 20 Feb 06). (Data gathered by MILVAX)

### Update: Human Avian Influenza (H5N1)

- Indonesia:** 26th confirmed case of H5N1 in a 23-year-old man from East Jakarta. Patient developed symptoms on 5 Feb and died on 10 Feb. See [WHO update](#).
- Iraq:** 2nd confirmed case of H5N1 in 39-year-old man (also the uncle of country's first H5N1 case in 15-year-old girl). Both cases were fatal. See [WHO update](#).
- See [pg 6](#) for list of cumulative cases from WHO. Also, see [WHO's situational update](#) for a detailed update.

### Influenza Outbreaks / News

At this time, AFIOH has not been notified of influenza outbreaks at any of the MTFs.

### AFIOH Report Overview

This report summarizes the status of all respiratory viral cultures processed at the AFIOH laboratory, which includes specimens collected from DoD beneficiaries at 43 tri-service sentinel sites and non-sentinel sites, as well as from foreign nationals through DoD overseas research laboratories (Armed Forces Institute of Medical Sciences [AFRIMS], the Naval Medical Research Center Detachment [NMRC-D], and the US Army Center for Health Promotion and Preventive Medicine West [CHPPM-W]).

Please visit our [website](#) to review the "Sentinel Site Surveillance Report" for detailed information on our sentinel site program and specimens submitted by our sentinel sites.

## Overall Laboratory Surveillance

**Week 07 overview.** At this time, 17 sites (10 sentinel and 6 non-sentinel, and 1 overseas research lab) have shipped 57 specimens that were collected from patients during Week 07. See map to right. Of the specimens with completed results (n=25), 100% were positive for influenza (22 influenza A and 3 influenza B).

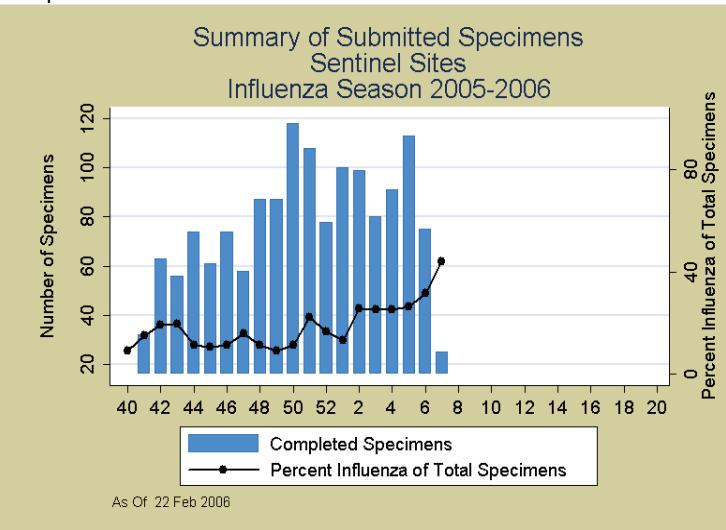
MAP: Geographic coverage of DoD Influenza Surveillance\*



\* As determined from specimen submissions. Even though an entire location is highlighted, surveillance may be limited in scope

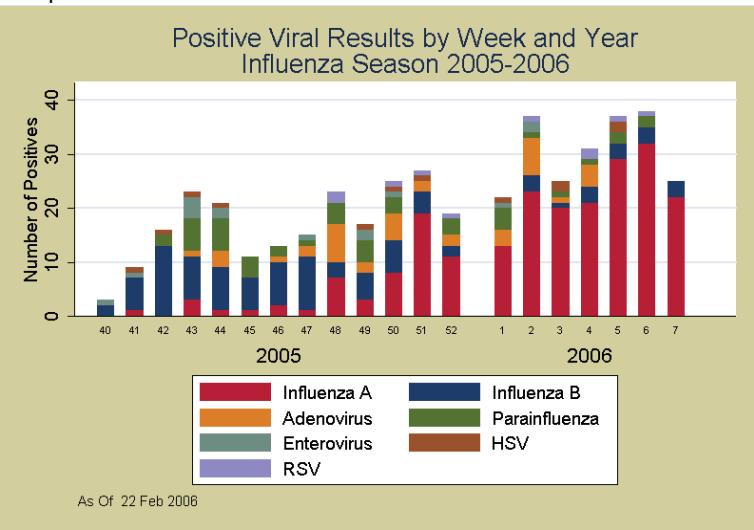
**Season overview.** Since 02 October 2005, 1,643 specimens were received by the AFIOH laboratory and 90% (n=1,483) have a completed result. Of these, 21% (n=314) were positive for an influenza virus (Graph 1): 15% influenza A; 6% influenza B. Furthermore, 3% (n=46) were positive for parainfluenza, 3% (n=40) were adenovirus, 1% (n=15) were enterovirus, 0.8% (n=12) were HSV, and 0.7% (n=10) were RSV (Graph 2).

Graph 1



As Of 22 Feb 2006

Graph 2

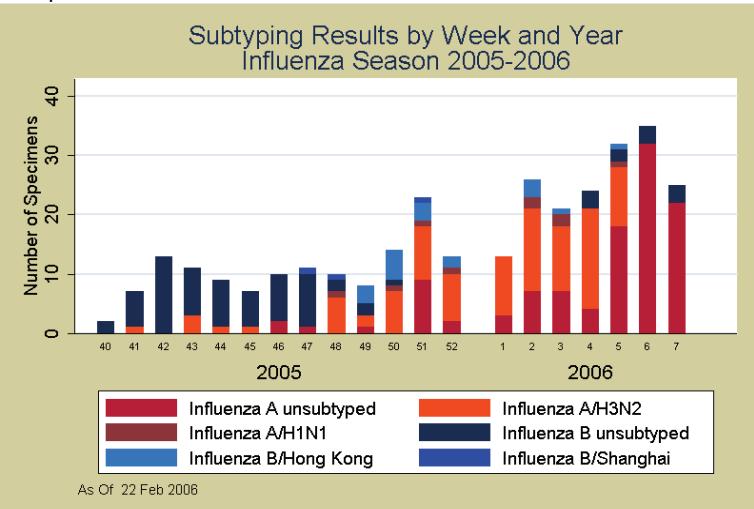


As Of 22 Feb 2006

**Influenza Subtype and Sequence overview.** All influenza isolates are typed and the AFIOH laboratory plans to subtype all OCONUS isolates and a portion of CONUS isolates. Of the 314 influenza isolates, 41% (n=130) have been subtyped: 100 influenza A/H3N2, 9 influenza A/H1N1, 18 influenza B/Hong Kong, and 3 influenza B/Shanghai (Graph 3).

Five (56%) of the H1N1 sub-typed isolates have been sequenced and there are a few notable amino acid changes from the influenza A/New Caledonia vaccine strain. Additionally, several H3N2 sub-typed isolates have been sequenced and appear to closely match the vaccine strain.

Graph 3



As Of 22 Feb 2006

The following information is gathered from the Influenza Surveillance Questionnaires submitted primarily by sentinel sites.

**Vaccine Effectiveness.** Forty-four percent (n=386) of the patients with questionnaires were vaccinated for influenza. Of these, 10% (n=39) were positive for influenza. Ninety-two percent (n=36) were vaccinated >2wks prior to illness. Twenty-five of the isolates collected from the vaccinated patients have been sub-typed: 19 H3N2, 4 H1N1, and 2 B Hong Kong.

**Hospital/Quarter status.** One (unvaccinated) patient whose specimen was positive for influenza A/H3N2 was hospitalized for 72 hrs. Additionally, 20 influenza A-positive patients were placed on "quarters" for at least 24 and no more than 72 hours (15 of these patients were vaccinated).

**Influenza Overview**

**Geographic location.** Influenza A (H3N2 and H1N1) has been the only influenza type identified in the Pacific Rim. Both influenza A and B have been identified in Europe and the Middle East and A/H3N2, A/H1N1, B/Hong Kong and B/Shanghai have been sub-typed from these isolates. Influenza B has been the only influenza type identified in both Central and South America, and both influenza B/Hong Kong and influenza B/Shanghai have been sub-typed. Although influenza A has been the primary isolate identified in CONUS sites, influenza B was recently isolated from two Air Force sites in Texas (Table 1).

**Table 1. Influenza by SITE and REGION**

Site by REGION	Sentinel Status	Influenza A			Influenza B			Total Influenza
		Not-subtyped	H3N2	H1N1	Not-subtyped	Hong Kong	Shanghai	
<b>OCONUS</b>								
<b>Pacific Rim</b>								
121st Army, S. Korea	Sentinel		3	3				6
Andersen AFB, Guam	Sentinel		3					3
Camp Zama, Japan	Sentinel	14	3					17
NH Okinawa, Japan	Sentinel		1					1
NH Yokosuka, Japan	Sentinel	2	3					5
Yokota AB, Japan	Sentinel		1					1
Misawa AB, Japan	Sentinel	1						1
Osan AB, S. Korea	Sentinel	2	2	3				7
Saipan, CMNI	Research lab		6	1				7
<b>Europe</b>								
Aviano AB, Italy	Sentinel		1					1
RAF Lakenheath, U.K.	Sentinel	4	1		8	3		16
<b>Deployed</b>								
Ali Al Salem AB, Kuwait	Sentinel		1					1
Al Udeid AB, Qatar	Sentinel			1				1
Camp Arifjan, Kuwait	Sentinel		1	1		1		3
Camp Buehring, Kuwait	Sentinel						1	1
<b>Central America</b>								
CHPPM-W, Honduras	Research lab				3		1	4
<b>South America</b>								
NMRC-D, Peru	Research lab				64	13	1	78
<b>CONUS</b>								
<b>East North Central</b>								
Scott AFB, IL	Sentinel	9	2					11
<b>East South Central</b>								
Maxwell AFB, AL	Non-Sentinel	6	1					7
<b>New England</b>								
Hanscom AFB, MA	Non-Sentinel	1						1
NHC New England, CT	Sentinel	2	1					3
<b>Mid Atlantic</b>								
McGuire AFB, NJ	Sentinel	5	3					8
<b>South Atlantic</b>								
Shaw AFB, SC	Non-Sentinel	2						2
<b>Mountain</b>								
USAF Academy, CO	Sentinel	24	21					45
Buckley AFB, CO	Non-Sentinel	2						2
Luke AFB, AZ	Non-Sentinel	2	3					5
<b>Pacific</b>								
CGS Ketchikan, AK	Sentinel		2					2
Elmendorf AFB, AK	Sentinel	1	2					3
NH Bremerton, WA	Sentinel	1						1
NMC San Diego, CA	Sentinel		1					1
Travis AFB, CA	Sentinel	2						2
Tripler AMC, HI	Sentinel		9					9
Edwards AFB, CA	Non-Sentinel	1	1					2
<b>South Atlantic</b>								
Andrews AFB, MD	Sentinel	3	2					5
NH Bethesda, MD	Sentinel	4	2					6
<b>West South Central</b>								
Barksdale AFB, LA	Non-Sentinel	1						1
Sheppard AFB, TX	Sentinel	3	5					8
Brooks City-Base, TX	Non-Sentinel	5	4		1			10
Goodfellow AFB, TX	Non-Sentinel		1					1
Lackland AFB, TX	Non-Sentinel	2	9					11
Randolph AFB, TX	Non-Sentinel	1						1
Tinker AFB, OK	Non-Sentinel	8	5		1			14
<b>Total Influenza</b>		108	100	9	76	18	3	314

**Area of Responsibility (AOR)**

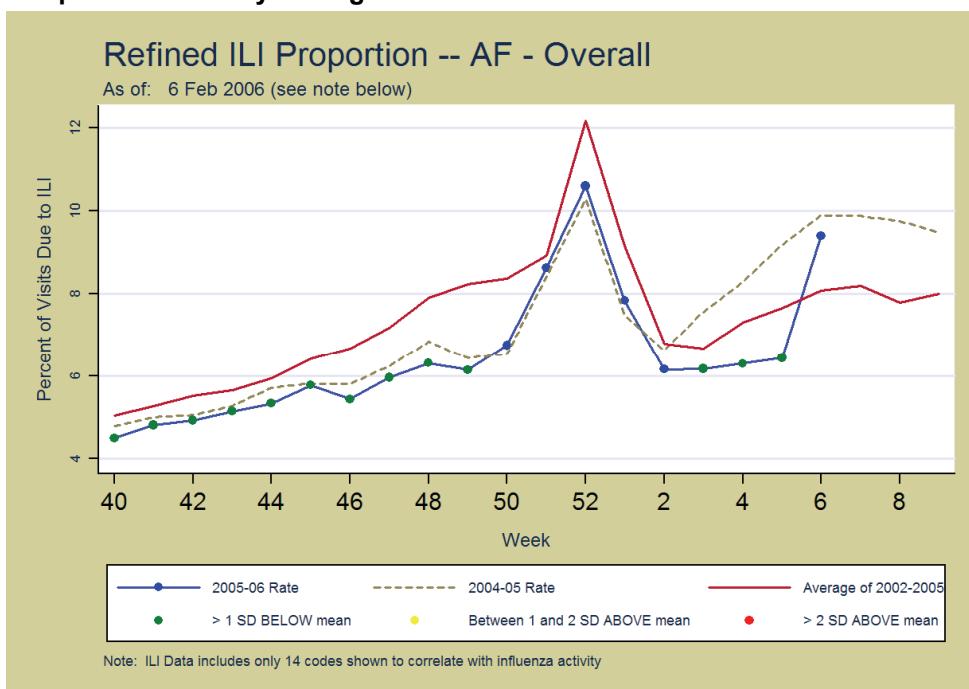
Note: Sentinel sites are distributed among the AOR as follows: 100% of the submitting CENTCOM and EUCOM sites, 93% of the PACOM sites, and 31% of the NORTHCOM sites. The "OTHER" AOR category includes specimens collected from non-DoD beneficiaries from the local clinics surrounding the overseas research lab locations and are not considered sentinel sites.

**Table 2. Laboratory Results by Area of Responsibility (AOR), Week 07 and Season Totals.**

Result	Area of Responsibility												ALL SITES	
	CENTCOM		EUCOM		NORTHCOM		PACOM		OTHER					
	Week	Season	Week	Season	Week	Season	Week	Season	Week	Season	Week	Season		
Influenza A		4			6	20	145	2	62				217	
Influenza B		2	3	11			2					82	97	
Adenovirus				3			27		5			5	40	
Parainfluenza		1		9			29		3			4	46	
Enterovirus		2		4			4		3			2	15	
HSV		1		3					2			6	12	
RSV							9		1				10	
Negative		46		125			533		221			121	1046	
Pending		4	7	15	19	53	4	18	2	70			160	
<b>TOTAL RECEIVED</b>	<b>0</b>	<b>60</b>	<b>10</b>	<b>176</b>	<b>39</b>	<b>802</b>	<b>6</b>	<b>315</b>	<b>2</b>	<b>290</b>			<b>1643</b>	

**Influenza-Like Illness (ILI)\***

Overview. As of 06-Feb-06. Influenza-like illness (ILI) activity among Air Force MTFs has increased to 9% for Week 07, yet still below 1 standard deviation (SD) below the mean. The SD is calculated weekly. It is important to note that data may vary from next week's graph.

**Graph 4. ILI Activity among Air Force MTFs**

\*Influenza-like illness (ILI) activity is gathered from the Standard Ambulatory Data Registry (SADR). The data are cleaned and a summary total of ICD-9's that match a smaller, but more specific and sensitive list of ICDs than is in the ESSENCE tool, are presented (Graph 3). The Surveillance Team at AFIOH are in the process of creating a DoD-wide ILI graph.

### Additional Influenza Surveillance: Army MEDCENS

The Army performs influenza surveillance at 6 Army Medical Center (MEDCEN) locations (Dwight David Eisenhower Army Medical Center [DDEAMC], Walter Reed Army Medical Center [WRAMC], Brooke Army Medical Center [BAMC], Madigan Army Medical Center [MAMC], Tripler Army Medical Center [TAMC], and Landstuhl Regional Medical Center [LRMC]), two of which are included in AFIOH's sentinel site surveillance network (see map to right). Any influenza positive specimen identified from TAMC or LRMC in the AFIOH portion of this report are also included in the "Army MEDCEN" report.



The Army MEDCEN sites are major medical centers equipped with the capability of detecting respiratory viruses, including influenza. It is important to note that the methodology varies at each site (i.e., testing procedures include direct fluorescent-antibody [DFA], various rapid antigen tests, culture, and polymerase chain reaction [PCR]) and reporting is routine, but varies from site to site (i.e., weekly, bi-weekly, monthly). The information reported and shared with AFIOH describes results from the individual MEDCENs and does not include demographic information at this time.

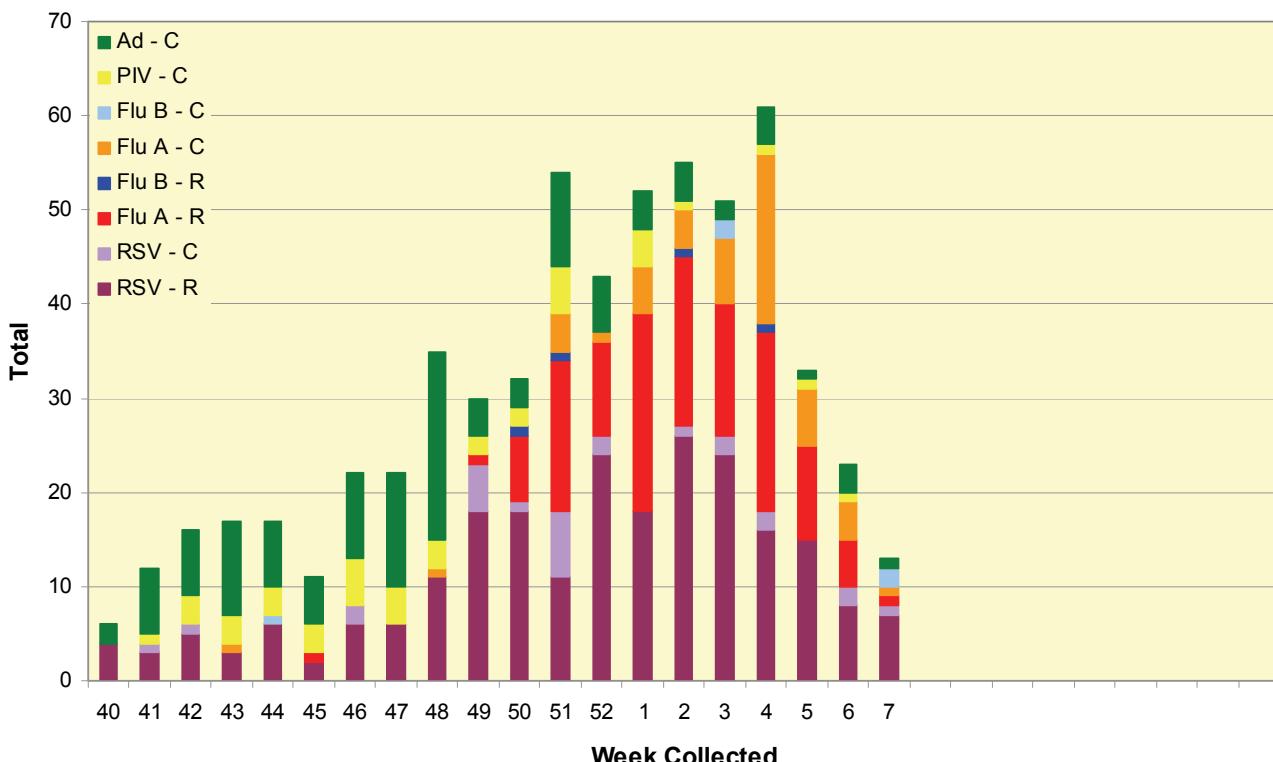
**Season overview:** Since 02 October 2005, **2,693** specimens were collected and tested. Of these, 7% (n=184) were positive for an influenza virus: 6% (n=175) influenza A and .03% (n=9) influenza B. Furthermore, 10% (n=258) were positive for RSV, 2% (n=42) were parainfluenza, and 4% (n=121) were adenovirus. See Graph 5 for a season overview.

**Duplicate data.** At this time, 9 influenza A viruses are identified in both the AFIOH report and Army MEDCEN report. Both TAMC and LRMC send selected positive specimens to AFIOH for sub-typing. All 9 influenza isolates collected from Tripler AMC have been identified as A/H3N2.

POC for Army MEDCEN surveillance is MAJ Wade Aldous.

**Graph 4. Number of Positive Respiratory Viruses, ARMY MEDCEN Weekly Report (as of 17 January 2006).**

**Graph 5. 2005-2006 ARMY MEDCEN Viral Respiratory Summary\***

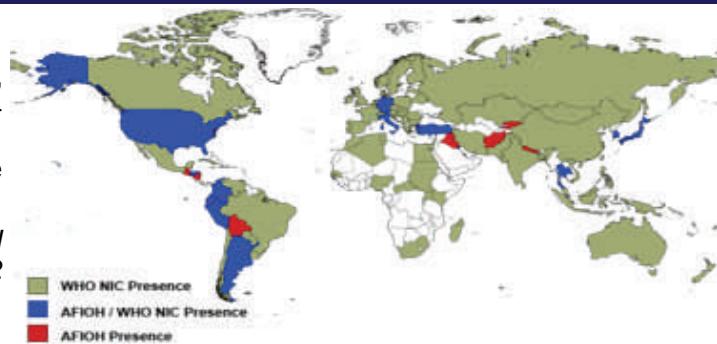


\* C = Culture positive ; R = Rapid test positive

### Contributions to National and Global Influenza Surveillance

It is important to note that although a country is highlighted, surveillance may be limited in scope. AFIOH provides surveillance data from 21 countries - 8 countries (Bolivia, El Salvador, Guatemala, Iraq, Kyrgyzstan, Nepal, Nicaragua, and Qatar) are not otherwise included in the current WHO network.

Note: Map describes countries submitting specimens to AFIOH and does not include all DoD contributing countries (i.e., NAMRU-2 and NAMRU-3 surveillance described on page 7).



### Data Sharing

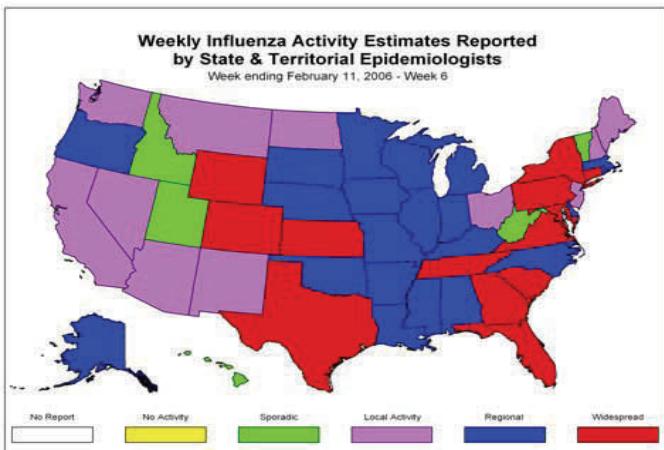
AFIOH electronically reports data to CDC using the Public Health Laboratory Information System (PHLIS). The data shared is incorporated into WHO's and CDC's influenza surveillance summaries. Additionally, data from Texas military sites are reported to the Texas Department of State Health Services (TDSHS).

### CDC / WHO Influenza Surveillance

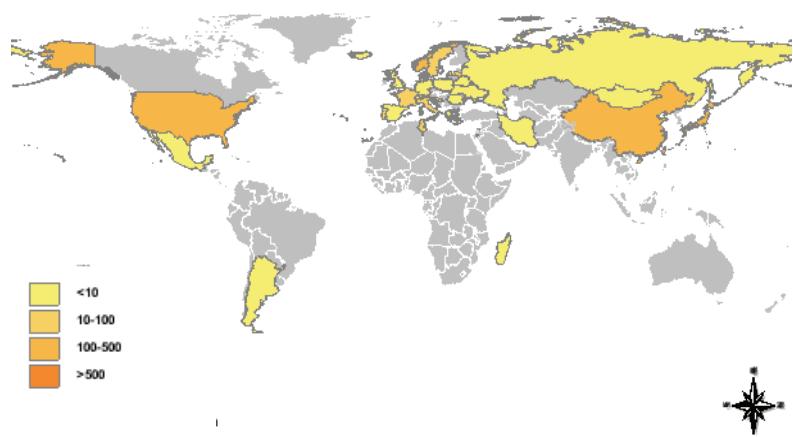
CDC reported influenza activity continuing at the same level as recent weeks during Week 06. Of the specimens tested, 18.7% were positive for an influenza virus (see CDC map below). Since 02 October 2005, a total of 7.9% of specimens have tested positive for influenza in the United States.

*\*\*WHO data may vary slightly from week to week. Please refer to [WHO's website](#) for detailed information regarding the WHO Influenza Surveillance data.*

CDC U.S. Influenza Surveillance Map<sup>1</sup>



WHO International Influenza Surveillance Map<sup>2</sup>



1. National Influenza Activity (CDC): <http://www.cdc.gov/ncidod/diseases/flu/weeklychoice.htm>

2. International Influenza Activity (WHO): <http://gamapserver.who.int/GlobalAtlas/home.asp>

### Avian Influenza Updates

*Human Avian Influenza.* 170 cases of lab-confirmed avian influenza (54% case fatality rate). The table was gathered from the [WHO website](#) on 21 February 2006 and has been updated as of 20 February 2006.

Country	2003		2004		2005		2006		Total	
	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths
Cambodia	0	0	0	0	4	4	0	0	4	4
China	0	0	0	0	8	5	4	3	12	8
Indonesia	0	0	0	0	17	11	9	8	26	19
Iraq	0	0	0	0	0	0	1	1	1	1
Thailand	0	0	17	12	5	2	0	0	22	14
Turkey	0	0	0	0	0	0	12	4	12	4
Viet Nam	3	3	29	20	61	19	0	0	93	42
<b>Total</b>	<b>3</b>	<b>3</b>	<b>46</b>	<b>32</b>	<b>95</b>	<b>41</b>	<b>26</b>	<b>16</b>	<b>170</b>	<b>92</b>

Total number of cases includes number of deaths.

WHO reports only laboratory-confirmed cases.

## DoD Global Influenza Surveillance Program Background

### DoD-GEIS Influenza Surveillance Network

The DoD Global Influenza Surveillance Program was established by the Global Emerging Infections Surveillance and Response System (GEIS) in 1997. The program established an influenza surveillance network, which includes the Air Force Influenza Surveillance Network (global influenza surveillance established in 1976), Navy (recruit adenovirus surveillance established in 1996), and the DoD overseas medical research facilities (i.e., the Naval Medical Research Unit located in Cairo, Egypt [NAMRU-3] and the Naval Medical Research Unit located in Jakarta, Indonesia [NAMRU-2]).

### AFIOH Influenza Surveillance Network

In 1976, the US Air Force Medical Service began conducting routine lab-based surveillance of influenza throughout the world. Efforts were expanded when it became part of the DoD-GEIS influenza surveillance network in 1997. AFIOH manages the Air Force surveillance program that includes global influenza surveillance among DoD beneficiaries at 43 tri-service sentinel sites (including deployed locations in Iraq, Qatar, Kuwait, and Kyrgyzstan), several non-sentinel sites, two DoD overseas medical research laboratories (the Armed Forces Research Institute of Medical Sciences located in Bangkok, Thailand [AFRIMS], and the U.S. Naval Medical Research Center-Detachment [NMRC-D] located in Lima, Peru) that collect specimens from local residents in Nepal, Thailand, Argentina, Bolivia, Ecuador, Peru, and Colombia, and the US Army Center for Health Promotion and Preventive Medicine-West (CHPPM-W), that collect specimens from local residents in El Salvador, Guatemala, and Honduras.

### Sentinel Site Surveillance

Sentinel site surveillance describes specimens submitted by the 43 sentinel sites using the protocol of collecting 6-10 specimens each week from patients meeting the ILI case definition (**fever  $\geq 100.5^{\circ}\text{F}$  and cough or sore throat**) and completing the "Influenza Surveillance Questionnaire" (see [our website](#) to review the questionnaire and the Sentinel Site Surveillance Report). Two sentinel sites, Tripler Army Medical Center (AMC), located in Hawaii, and Landstuhl Regional Medical Center (RMC), located in Germany, send selected influenza positive specimens to AFIOH to be further characterized. These sites are major medical centers and have established laboratories capable of detecting influenza. Their involvement in the DoD-wide program is valued due to their mission and geographical location.

### Processing Methods

Specimens are processed in BSL-2 conditions (BSL-3 available) and tested for influenza, parainfluenza, adenovirus, enterovirus, herpes simplex virus (HSV), and respiratory syncytial virus (RSV). Specimens are held up to 14 days before a negative result is given. All influenza isolates are typed as A or B and a portion are subtyped using hemagglutination-inhibition (HI) or polymerase chain reaction (PCR) procedures. A portion of these isolates undergo molecular sequencing.

### 2005-2006 Trivalent Influenza Vaccine Composition

#### Northern Hemisphere

- A/New Caledonia/20/99-like (H1N1)
- A/California/7/2004-like (H3N2)
- B/Shanghai/361/2002-like

#### 2006 Southern Hemisphere

- A/New Caledonia/20/99-like (H1N1)
- A/California/7/2004-like (H3N2)\*
- B/Malaysia/2506/2004

\*The currently used vaccine virus is A/New York/55/2004

This report was prepared on **22 February 2006**. For an expanded view of the information in this report, visit our website at <https://gumbo.brooks.af.mil/pestilence/Influenza/>. Also available on our website is a list of previous weekly surveillance reports, program information for sentinel sites (including an educational briefing and instruction pamphlets for clinic staff), and an overview of historical data.

Please visit the [DoD-GEIS website](#) for an overview of influenza surveillance at all collaborating DoD-GEIS organizations.

#### AFIOH Contact Information

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